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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/750,234	12/31/2003	Ven R. Holalkere	42P17648	8853

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EXAMINER	
QUACH, TUAN N	

ART UNIT	PAPER NUMBER
2826	

DATE MAILED: 12/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

AK

Office Action Summary	Application No.	Applicant(s)	
	10/750,234	HOLALKERE ET AL.	
	Examiner	Art Unit	
	Tuan Quach	2826	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 September 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-60* is/are pending in the application.

4a) Of the above claim(s) *31-60* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *31 December 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Tuan Quach
Primary Examiner

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Applicant's election of claims 1-30 in the reply filed on September 6, 2005 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

The following obvious informalities need to be corrected. In claim 12, the period is missing.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-7, 9-22, 24-30 are rejected under 35 U.S.C. 102(e) as being anticipated by either Prasher et al.

Prasher et al. 6,903,929 B2 teaches re claim 1 an apparatus comprising an IC die, e.g., die 100, and re claim 16, the use of IC package 320 is also taught, column 6 line 29 et seq., and a thermal mass coupled thereto including a stacked microchannel exchanger, e.g., 200, 300, 400. See the abstract, Fig. 2b, 3a-3d, 4a, 5a, column 3 line 64 to column 10. Re claims 2, 3, 13-15, 17-18, 28-30, the use of solder 310 including suitable materials such as Cu, etc., and similar materials bonded thereto, is also taught, column 5 line 21-35. Re claim 4-6, 19-21, the use of thermal adhesive 314 for such

bonding including bonding to silicon and polymer, adhesive including polymer, e.g., epoxy is also taught, column 11 line 54. The intended use of silicon to silicon would have been met or otherwise apparent when silicon is used as the respective component materials Re claims 9, 24, the use of thermal interface material layer is also taught, column 7 6 line 67. Re claims 10, 25, the flip bonded is also taught, column 8 line 36. Re claims 11, 12, 26, 27, the use of fasterners and standoffs is also taught, column 5 lines 55-63. Prasher et al. 6,934,154 B2 teaches similar apparatus and corresponding limitations, column 3 line 16 to column 6 line 64, including die 100, die 200, 300A, solder 312, IC package 320, IC die 100, thermal adhesive and adhesive as well as fasteners and standoffs 405; TIM layer 410.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 6-8, 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Prasher et al. taken with Gros 4,759,874.

Although Prasher et al. as applied above does not recite the specific adhesive in these claims, such use would have been obvious and advantageous as evidenced by Gros, the abstract, to obtain good adhesive strength and thermal stability. The limitations regarding the silicon to silicon bonding and the polymer would also have been obvious as the same adhesive is employed.

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-7, 9-22, 24-30 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-30 of U.S. Patent No. 6,934,154 B2 or over claims 1-28 of 6,903,929 B2. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims of instant application is broader than that of '154 or and encompassed therein.

In particular, the IC die and the thermal mass comprising stacked microchannel heat exchanger would have been met or obvious over the IC die and the thermal mass including plurality of microchannel heat hexchannger in claims 1 and 16 of '154. The various means of coupling such as solder, solderable layer, fasteners, thermal adhesives, thermal interface material, in the instant claims, e.g., claims 2, 3, 13-15, 17-18, 28-30, regarding the use of solder including suitable materials such as Cu, etc., and similar materials bonded thereto, and re instant claims 4-6, 19-21, as delineated above would have been met or obvious over the claims in '154, e.g., claims 2-3, 6, 7, 19, 20, 21. The flip chip in instant claims 10, 25 would have been obvious as over claims 8, 22 of '154.

Claims 1-7, 9-22, 24-30 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-28 of 6,903,929 B2. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims of instant application is broader than that of '929 and encompassed therein. In particular, the IC die and the thermal mass comprising stacked microchannel heat exchanger would have been met or obvious over the IC die and the thermal mass including plurality of microchannel heat hexchannger in claims 1 and 15 of '929. The various means of coupling such as solder, solderable layer, fasteners, thermal adhesives, thermal interface material, in the instant claims, e.g., claims 2, 3, 13-15, 17-18, 28-30, regarding the use of solder including suitable materials such as Cu, etc., and similar materials bonded thereto, and re instant claims 4-6, 19-21, as delineated above would have been met or obvious over the claims in

'929154, e.g., claims 2-4,8, 9. The flip chip in instant claims 10, 25 would have been obvious as over claim 12 of '929.

Claims 6-8, 21-23 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-30 of U.S. Patent No. 6,934,154 B2.or 6,903,929 B2 above and further in view of Gros for the same reasons delineated above regarding the conventionality and advantages of the claimed adhesive.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Mundinger et al. 5,727,618, Meyer et al. 6,865,081 B2, Go et al. 6,812,563 B2, and Benavides et al. 6,821,819 B1 are made of record.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner Tuan Quach whose telephone number is 571-272-1717. The examiner can normally be reached on M-F from 8:30 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor Nathan Flynn, can be reached on 571-272-1915. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tuan Quach
Primary Examiner